Permit Fact Sheet

General Information

Permit Number:	WI-0036447-07-0	
Permittee Name:	VILLAGE OF LIME RIDGE	
Address:	P O Box 113	
City/State/Zip:	Lime Ridge WI 53942	
Discharge Location:	SE ¼ of SW ¼ of Section 33, T12N, R3E, Town of Ironton, Sauk County	
Receiving Water:	Narrows Creek (Narrows Creek/Baraboo River Watershed, LW22-Lower Wisconsin River Basin) in Sauk County.	
StreamFlow ($Q_{7,10}$):	0.2 cfs	
Stream Classification:	Warm Water Sport Fish (WWSF), non-public water supply	
Design Flow(s)	Daily Maximum	0.1207 MGD
	Monthly Maximum	0.0255 MGD
	Annual Average	0.0154 MGD
Significant Industrial Loading?	None	
Operator at Proper Grade?	Yes, Required: Basic A3, D & SS (Permittee has until end of permit term to obtain SS)	
Approved Pretreatment Program?	N/A	

Facility Description

The Village of Lime Ridge operates a recirculating sand filter wastewater treatment plant providing treatment to a combination of domestic and some commercial wastewater. Each residence or business has a septic tank that discharges wastewater to the sanitary sewer system leading to the wastewater treatment facility. The facility includes a settling tank with wastewater pumped to a three-cell recirculating sand filter. Underdrains collect treated effluent, which may be pumped back up to the sand filter and mixed with influent wastewater or discharged as treated effluent to Narrows Creek. During summer the effluent is disinfected with chlorine and then dechlorinated before being discharged to the stream down a cascade step aerator. Currently, no treatment for phosphorus is occurring. The facility is designed to treat an average daily flow of 0.0154 MGD and presently receives an average of 0.0108 MGD for treatment. Discharge occurs on a daily basis, year-round. Solids in the sand filter's settling tank are hauled to another treatment facility for further treatment. Solids from the 82 individual community septic tanks are pumped and hauled by a licensed contract hauler.

The permittee has been found to be in substantial compliance with the terms and conditions of its current permit. Shaded cells indicate changes to limits or monitoring requirements.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	N/A	Influent: 24-Hr flow proportional sampler located at the inlet to the septic tank.
001	0.011 MGD (Jan 2018 – September 2020)	Effluent: 24-Hr flow proportional composite sampler and flow meter located at the discharge from the splitter box. Grab samples from the bottom of the step aerator, prior to discharge to Narrows Creek.
901	N/A	Contents from the septic tank of the Recirculating Sand Filter WWTF and the community contracted individual septic tanks serviced by a licensed septage hauler.

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total		mg/L	2/Month	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	2/Month	24-Hr Flow Prop Comp	

Changes from Previous Permit:

No changes.

Explanation of Limits and Monitoring Requirements:

Tracking of BOD_5, and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in subsection 6.4.6 of the permit. Standard monitoring for minor municipal facility.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	42 mg/L	Weekly	24-Hr Flow	May through October

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
				Prop Comp	
BOD5, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	November through April
BOD5, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	5.4 lbs/day	Weekly	Calculated	May through October
Suspended Solids, Total	Weekly Avg	42 mg/L	Weekly	24-Hr Flow Prop Comp	May through October
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	November through April
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	5.4 lbs/day	2/Week	Calculated	May through October
Nitrogen, Ammonia (NH3-N) Total	Daily Max	20 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	19 mg/L	Weekly	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	5.0 mg/L	Weekly	24-Hr Flow Prop Comp	May through October
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	20 mg/L	Weekly	24-Hr Flow Prop Comp	November through March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	8.0 mg/L	Weekly	24-Hr Flow Prop Comp	April through September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	Weekly	24-Hr Flow Prop Comp	October through March
Chlorine, Total Residual	Daily Max	38 µg/L	2/Week	Grab	May through September
Chlorine, Total Residual	Weekly Avg	22 µg/L	2/Week	Grab	May through September
Chlorine, Total Residual	Monthly Avg	22 µg/L	2/Week	Grab	May through September
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Weekly	Grab	Interim limit effective May through September annually until the final E. coli limit goes into effect per the Effluent Limitations

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					for E. coli Schedule.
E. coli		#/100 ml	Weekly	Grab	Monitoring only May through September annually until the final limit goes into effect per the Effluent Limitations for E. coli Schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit Effective May through September annually per the Effluent Limitations for E. coli Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit Effective May through September annually per the Effluent Limitations for E. coli Schedule. See the E. coli Percent Limit section. Enter the result in the MR on the last day of the month.
Dissolved Oxygen	Daily Min	6.0 mg/L	Weekly	Grab	
pH Field	Daily Max	9.0 su	Weekly	Grab	
pH Field	Daily Min	6.0 su	Weekly	Grab	
Phosphorus, Total	Monthly Avg	5.5 mg/L	Weekly	24-Hr Flow Prop Comp	This is an interim (variance) limit effective throughout the permit term. See Phosphorus Section and Schedule.
Phosphorus, Total		lbs/day	Weekly	Calculated	Calculate the daily mass discharge of phosphorus on the same days phosphorus sampling occurs. Mass (lbs/day) = Concentration (mg/L) x Flow (MGD) x 8.34.
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See TMDL section.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See TMDL section.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section below.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section below. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Copper, Total Recoverable		µg/L	Quarterly	24-Hr Flow Prop Comp	
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET section

Changes from Previous Permit:

Flow Rate sample frequency changed to daily for eDMR reporting purposes. Weekly average ammonia limits for November to March added. Chlorine monthly average limit added. Nitrogen series monitoring added. Copper monitoring and acute WET testing added.

The permittee has applied for a variance from the final phosphorus WQBELs. The permittee's approved WLA for this permittee is 8 lbs/year, which results in calculated phosphorus mass limits of 0.085 lb/day monthly average and 0.028 lb/day 6-month average. If the variance is approved by the EPA, the permittee will be required to maintain monthly average phosphorus concentrations below the interim limit of 5.5 mg/L, calculate and report total monthly and 12-month rolling sum phosphorus mass discharge, and implement a Pollution Minimization Program (PMP) along with assess upgrade alternatives to meet final water quality-based effluent limits.

Fecal coliform monitoring and limits have been replaced with *Escherechia coli* (*E. coli*) monitoring and limits. *E. coli* monitoring is required at the permit effective date. An interim fecal coliform limit of 400 #/100 ml as a monthly geometric mean will apply from the permit effective date through the end of a compliance schedule. At the end of the compliance

schedule, *E. coli* limits of 126 #/100 ml as a monthly geometric mean that may never be exceeded and 410 #/100 ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply.

Explanation of Limits and Monitoring Requirements:

Refer to the WQBEL memo for the detailed calculations, prepared by Sarah Luck dated July 17, 2020 used for this reissuance.

Regulatory changes to s. NR 205.065, Wis. Adm. Code, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. All parameters were assessed for compliance with the changes based on 40 CFR 122.45(d) and updated as needed.

BOD_5, pH, Fecal Coliform, and Total Suspended Solids – existing categorical limitations are retained. The reference effluent flow rates and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time. Existing ch. NR 210, Wis. Adm. Code, pH limitations will remain. On May 1, 2020 revisions to the bacteria surface water criteria became effective. Therefore, this permit has been updated to include the existing fecal coliform limit as an interim limit along with E. *coli* monitoring and a compliance schedule to meet required *E. coli* limits. The interim fecal coliform limit is effective until the final *E. coli* limit becomes effective per the Schedule.

***E. Coli* -** Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying *E. coli* WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for *E. coli* while facilities are disinfecting during the recreation period, and establish effluent limitations for *E. coli* established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to *E. coli* to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code.; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

Dissolved Oxygen (DO) – The DO limitation of 6.0 mg/L applies for summer only (May 1 through October 31) because these months have calculated BOD_5 using the 26-lb method. The DO limit does not apply in winter (November 1 through April 30) because these months have categorical limits for BOD_5 and suspended solids, which are considered protective of the 5.0 mg/L warm water DO standard.

Chlorine – Requirements for disinfection can be found at s. NR 210.06 (1), Wis. Adm. Code. Lime Ridge is required to disinfect its effluent during the summer months of May through October. The facility uses chlorine for disinfection and then dechlorinates the effluent prior to being discharged to Narrows Creek. Regulatory changes to s. NR 205.065, Wis. Adm. Code, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. These changes are based on 40 CFR 122.45(d). Monthly average limits have been added to chlorine limitations from the previous permit in order to comply with this regulation.

Nitrogen Ammonia – The limits in the current permit do not change as there have been no changes in the effluent or receiving water flow rates. However, additional weekly average limits in November through Marchwere added to meet the requirements of s. NR 106.07, Wis. Adm. Code.

Phosphorus - Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010 as detailed in chs. NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. Lime Ridge has applied for an individual phosphorus variance in accordance with s. 283.15, Wis. Stats. Conditions for this variance include: maintaining phosphorus effluent concentrations below the interim limit of 5.5 mg/L; calculate, report and track phosphorus mass discharge on a lbs/day, total monthly lbs/month and lbs/year 12-month rolling sum; and implement a Pollution Minimization Program (PMP)

along with required evaluation of three facility upgrade options. See phosphorus section in the permit and the Phosphorus Variance and Phosphorus PMP schedule.

TMDL (TOTAL MAXIMUM DAILY LOAD) DERIVED LIMITS - TMDL Approved - Waste load allocations specified in TMDLs are expressed as WQBELs (water quality based effluent limits). The waste load allocated-derived WQBELs are consistent with the assumptions and requirements of the approved TMDL for Lakes Petenwell, Castle Rock, and Wisconsin and the related Waste Load Allocation (WLA) included in Appendix K of the TMDL report were adopted by rule in s. NR 102.06 (7), Wis. Adm. Code, on June 1, 2020, and approved by the U.S. Environmental Protection Agency on July 9, 2020. The Wisconsin River Basin TMDL will set phosphorus waste load allocations (WLAs) for dischargers throughout the project area. WLA-derived limits must be included in WPDES permits once the TMDL has been approved by US EPA. The permittee's approved WLA for this permittee is 8 lbs/year, which results in calculated phosphorus mass limits of 0.085 lb/day monthly average and 0.028 lb/day 6-month average. Variance limits will be utilized in lieu of TMDL-based effluent limits for phosphorus for the duration of any approved variance.

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N) - The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019. Annual tests are scheduled in rotating quarters as listed in the permit.

Copper – Following data analysis copper sampling showed variability within the dataset. Additionally, the data showed that the permittee's discharge is only slightly less than the calculated WQBEL therefore, additional monitoring throughout the permit term is needed to ensure representative data is available for the next permit reissuance.

Whole Effluent Toxicity - Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). The permittee shall complete two acute tests in the quarters listed in the permit.

3 Septage Management - Proposed Monitoring and Limitations

Septage management is required in accordance ch. NR 113, Wisconsin Administrative Code. Records must be kept and made available to the Department on request. Required record keeping includes volumes of septage pumped, dates when the septage was removed, land application site DNR number and method used to satisfy pathogen and vector control, and/or the treatment plant where septage is disposed. Annual reporting is required when the permittee land applies the septage. Annual reporting is also required when the permittee disposes of septage at a designated treatment facility.

Sample Point Number: 901- Septic Tank

Changes from Previous Permit:

No changes

Explanation of Limits and Monitoring Requirements:

Requirements for septage management are determined in accordance with ch. NR 113, Wis. Adm. Code.

4 Compliance Schedules

4.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	05/21/2021
Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than **April 30, 2022**. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than **April 30, 2022**. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by **April 30, 2022** and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule (‘Submit Facility Plan’, 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', ‘Construction Upgrade Progress Report’, 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than **April 30, 2025**.	11/30/2021
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2022
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2023

Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2023
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2024
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2025
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2025

Explanation of *E. coli* Schedule:

A compliance schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent *E. coli* water quality-based effluent limits while coming into compliance with the limits as soon as reasonably possible.

4.2 Phosphorus Source Reduction Measures

As a condition of the variance to the water quality based effluent limitation for phosphorus granted in accordance with s. 283.15, Wis. Stats., the permittee shall perform the following actions.

Required Action	Due Date
Annual Phosphorus Progress Report: Submit an annual Phosphorus Progress Report. The annual Phosphorus Progress Report shall: Indicate which phosphorus source reduction measures or activities outlined in the approved Phosphorus Source Reduction Plan have been implemented; Include an analysis of trends in monthly average and six-month average effluent phosphorus concentrations and mass discharge of phosphorus based on sampling and flow data; Include an analysis of how effluent phosphorus varies with time and with any significant loadings of phosphorus. The first annual Phosphorus Progress Report is to be submitted by the Due Date.	01/31/2022
Annual Phosphorus Progress Report #2: Submit an annual Phosphorus Progress Report as defined above.	01/31/2023
Annual Phosphorus Progress Report #3: Submit an annual Phosphorus Progress Report as defined above.	01/31/2024
Annual Phosphorus Progress Report #4: Submit an annual Phosphorus Progress Report as defined above.	01/31/2025
Final Phosphorus Report: Submit a final report documenting the success in reducing phosphorus concentrations in the effluent as well as the anticipated future reduction in phosphorus sources and phosphorus effluent concentrations. The report shall summarize phosphorus source reduction measures that have been implemented during the current permit term and state which, if any, source reduction measures from the approved Phosphorus Source Reduction Plan were not pursued and why. The report shall include an analysis of monthly average and six-month average effluent phosphorus concentrations and mass discharge of phosphorus based on sampling and flow data covering the	01/31/2026

current permit term. The report shall also include an analysis of how effluent phosphorus varies with time and significant loadings. Additionally, the report shall include a proposed variance limit and source reduction measures for negotiations with the department if the permittee intends to seek a renewed phosphorus variance per s. 283.15, Wis. Stats.	
Annual Phosphorus Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual phosphorus reports each year covering source reduction measures implemented and phosphorus concentration and mass discharge trends.	

Explanation of Schedule:

This compliance schedule requires the permittee to implement a phosphorus minimization program (PMP). The permittee is required to investigate ways to reduce phosphorus entering and leaving the WWTF or other feasible alternatives with the goal of meeting WQBEL limits. Annual progress reports are required to document completion of the required items in the approved PMP plan.

Special Reporting Requirements

None

Other Comments:

None

Attachments:

Substantial Compliance Determination – August 5, 2020

Water Quality Based Effluent Limits with Map(s) – July 17, 2020

Phosphorus Variance Package – EPA datasheet

Proposed Expiration Date:

March 31, 2026

Prepared By:

Jennifer Jerich, Wastewater Specialist

Date: 10/29/2020

Updated (based on fact check comments): 12/02/2020

Updated (based on public notice comments):